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Servicing the

# KODAK RETINA IIIS CAMERA

EASTMAN KODAK COMPANY
Apparatus Service Department
ROCHESTER 4, N.Y.

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## FILM TRANSPORT

The film wind mechanism of the Retina IIIS Camera is identical with recent models except that the shutter is set through a transfer shaft similar to that used in the Kodak Retina Reflex Camera.

### SPECIFICATIONS

1. The rewind post assembly should:
   a) Be retained by detent action when flush with the top housing.
   b) Not require excessive force to withdraw it from the detent position.
   c) Rotate in both directions with a minimum of resistance.

2. The film type indicator inner ring should rotate with sufficient resistance to prevent accidental movement during normal use.

3. The film advance lever should:
   a) Set the shutter.
   b) Rotate the sprocket.
   c) Rotate the take-up spool. (Clutch assembly should have sufficient torque to take up the film).
   d) Advance the film counter one mark at the end of the stroke. (Index mark should fall within the semicircle on the top housing).
   e) Be locked when the exposure dial indicates the final or No. 1 exposure.

4. The film take-up spool should be free of imperfections. (Take-up lug should be present).

5. The exposure release button should:
   a) Be free of binds and have spring tension sufficient to return button to the up position.
   b) Be threaded to accept a cable release.
   c) When depressed:
      1. Trip the shutter.
      2. Release film transport mechanism at the same time or slightly in advance of tripping shutter.
      3. Have a slight amount of over-travel after tripping shutter.

6. The film release button should:
   a) Be free of binds and have spring tension sufficient to return button to the up position.
   b) When depressed:
      1. Release film transport mechanism for advancement to next exposure.
      2. Release a partially advanced film advance lever.
      3. Release the otherwise locked counter advance button to allow movement of counter dial.

7. The counter advance button should:
   a) Actuate counter dial only when unlocked.
   b) Be free of binds and have spring tension sufficient to return button toward the eyelet lens.

8. The rewind clutch button should:
   a) When depressed, release film transport for rewinding of film.
   b) Remain in depressed position until released on first actuation of film advance lever.

9. The pressure pad, back frame, film roller and film rails should be free of imperfections which can damage film detrimentally in the picture area.

10. In the event that the Exposure Meter is removed to facilitate repairs, it should be replaced and adjusted in accordance with Instruction 34 and 35.

SERVICE HINTS

11. Disassembly and Reassembly
    a) Normal repairs to film wind mechanism will require the removal of meter assembly. (Instruction 33)
    b) Disassembly for replacement of shutter setting transfer shaft will require removal of the following components:
        1. Meter assembly (Instruction 33). For reassembly, see Instruction 34 and 35.
        2. Front complete (Instruction 46). For reassembly, see Instruction 47.
        3. Range finder (Instruction 26).
        4. Rack retainer plate.
        5. Light tunnel. Remove adjusting bracket at top of lens image control arm and swing arm out to allow removal of tunnel and frame.
        6. Range finder support plate assembly.

12. Trouble Shooting:

| | |
|---|---|
| a) Film advance lever binds on return | Rack retainer plate may bind the rack - fit spacing washers as required for free movement.<br>Bent winding shaft cam assembly<br>Loose shaft retaining screws |
| b) Film advance lever fails to set shutter | Incorrect timing between transfer shaft and shutter setting idler gear |
| c) Film advance lever jammed | Broken teeth in rack or transfer shaft |

## FINDER AND RANGE FINDER

The finder and range finder system of the Retina IIIS Camera is similar in some respects to the Retina IIIC, but has the added provision of automatic lens framing and parallax correction for any of the accessory lenses from 35 to 135mm. The 35mm wide angle frame, however, will be visible in the finder regardless of the lens fitted to the camera.

Framing for the 28mm wide angle lens is accomplished by a separate accessory finder mounted on the accessory clip.

### SPECIFICATIONS

13. Glass surfaces of finder and range finder assembly should be clean.

14. Taking lens focus and range finder alignment should be checked on an object or chart 15 feet from the film plane. (Approximately, the rear top edge of the top housing).

15. Maximum permissible focus scale error of range finder should be limited to the width of extended portion of knurled ring at focusing index arrow. (f/2.8)

16. The 50, 85 and 135mm lens image frames (individually) should:
    a) Automatically and freely shift into position when the corresponding lens is attached.
    b) Be clear and readily visible when in position.
    c) Not be visible when 35mm lens is in position.

17. The 35mm lens frame should be clear and readily visible regardless of lens fitted.

18. The 35, 50, 85 and 135mm lens image frames should automatically and freely shift up or down to compensate for parallax when the focus ring of the corresponding lens is rotated.

19. When the finder image is aligned as in Instruction 25, #3, the reflected 50mm lens image frame should intersect the chart frame at all four corners.

20. There should be no apparent shift of range finder image when the eye is moved in relation to eyelet lens.

21. There should be no binding or hesitation of movable image when the focus ring of any lens is rotated clockwise and counter-clockwise through its entire travel.

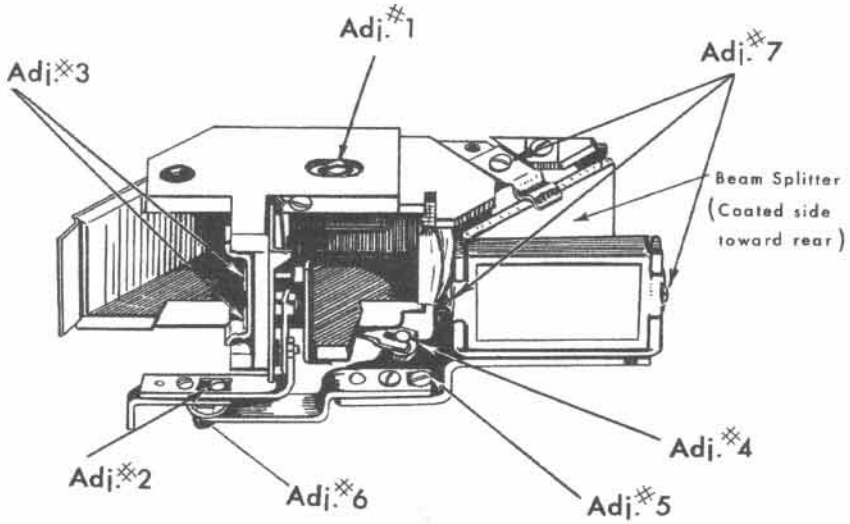
22. There should be no lag or hesitation of movable image when moved off of "infinity" position by the focus ring of any lens.

23. Stationary and movable images of a vertical line should be parallel.

24. Stationary and movable images of a horizontal line should be superimposed at any distance setting of any lens.

25. Adjustments

NOTE: All range finder adjustments or checks should be made with standard 50mm (f/2.8 or f/1.9) lens focused to, and attached to, the camera.




#1 - Range finder image (bright circle) focus control

Loosen lock screw and slide assembly to right or left. When properly adjusted, image should be at maximum brightness and focus and there should be little or no image shift by eye movement only.

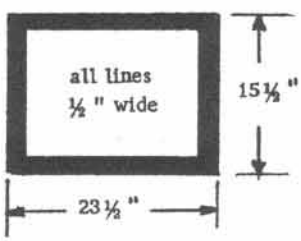
#2 - Reflected taking lens image frame control

Loosen lock screw and rotate eccentric stud. When properly adjusted, the reflected 50mm frame should be clearly visible. (35mm frame is always visible regardless of lens attached).

#3 - Horizontal parallax control (see note)

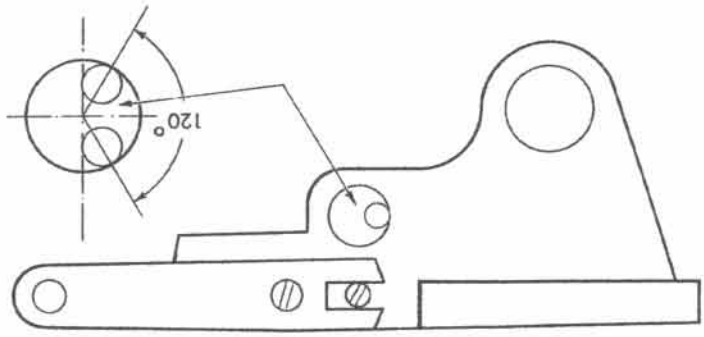
Loosen screws slightly and move mask laterally.

NOTE: To facilitate parallax adjustments #3 and #4, it is recommended that a chart (see sketch) be set up on the lens axis 3 feet from the film plane and aligned so the black frame is just within the edges of the back frame.



#4 - Vertical parallax control (see note under #3)

Remove range finder (Instruction 26) and rotate eccentric stud. It is important that any adjustment of this stud remain in the 120° area as shown:




#5 - Infinity control

Loosen lock screw and rotate eccentric stud. When properly adjusted at "infinity" position (at least 500 feet), finder images should coincide.

#6 - Close-up control (3.5 ft. from film plane)

Rotate the rate adjusting cam slightly. Re-check at "infinity" position and repeat adjustments until coincidence is obtained at "infinity" and 3.5 feet.

#7 - Horizontal alignment of range finder images

Loosen mirror hold down bracket screw slightly and move bracket forward or to the rear. In cases of severe misalignment it may be necessary to loosen the lens bracket assembly screws and re-position the lens. When properly adjusted, the two horizontal line images in the range finder must be in alignment.

26. Removal of Range Finder

To dissemble range finder complete from camera case, remove the two attaching screws, then hold movable arm toward the rear and slide the assembly off the case.

27. Trouble Shooting

| | |
|---|---|
| a) No action when focusing | Guide pin bent or sticking<br>Actuating spring broken or detached<br>Movable arm binds or jams |
| b) Reflected lens image frame uneven or two frames visible | See Adjustment #2 |
| c) Range finder aligns at "Inf." but not at 3.5 feet | See Adjustments #5 and #6 |
| d) View finder image does not align with taking lens image | See Adjustments #3 and #4 |
| e) Range finder image does not align horizontally | See Adjustment #7 |

## EXPOSURE METER

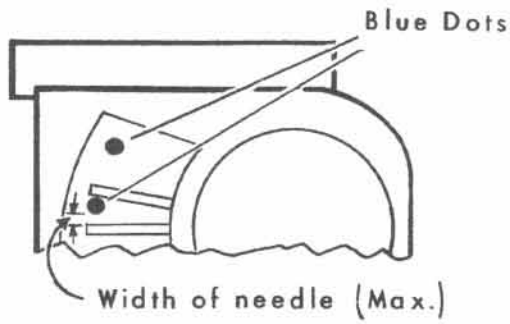
Test Light Source: The light source referred to in this section is one which requires a diaphragm setting midway between f/5.6 and f/8 at ASA 10 with a shutter speed of 1/30 second.

SPECIFICATIONS

28. ASA Scale Mechanism
    a) The ASA scale setting should not change during normal operation of setting wheel.
    b) When lock button is depressed, ASA scale should be locked to permit rotating meter housing index to any desired ASA film speed.
    c) When released, lock button should have sufficient spring tension to return to "up" position and release the scale.

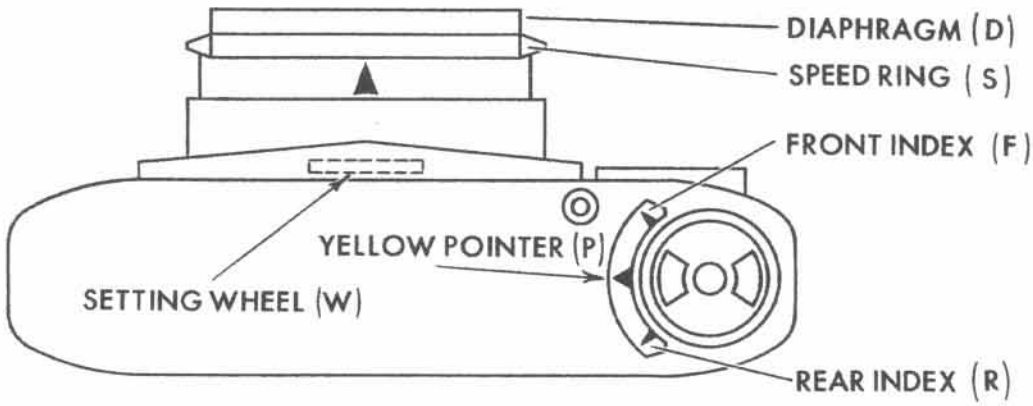
29. Zero Alignment
    When all light is excluded from honeycomb lens, white needle should be aligned with first blue dot at rear of meter.

30. Meter Response
    When meter is positioned in front of the test light source, white needle should be aligned within the limits shown:




31. Standard Exposure Indication
    Set film speed to ASA #10, (S) at 30, position meter in front of the test light source and move (P) to coincide with white meter needle. (D) should read between 5.6 and 8. Indication at other speeds should be:

| | | | |
|---|---|---|---|
| 1/4 second | - between f/22 and f/16 | 1/60 second | - between f/5.6 and f/4 |
| 1/15 " | - between f/16 and f/8 | 1/125 " | - between f/4 and f/2.8 |



32. Exposure Setting Mechanism

Remove lens, set film speed to ASA #10, (S) at "B", (D) at f/1.9. Mechanism should function as follows, smoothly, positively and without binds:

Rotate (W) to advance (D) to 22
(P) should stop when 3/16" to 1/4" from front index (F)
Continue rotation of (W)
(S) should advance towards 500, and
(P) should advance to (F) when (S) = 60
Continue rotation of (W) to advance (S) to 500
(P) should remain stationary at, or just in front of, (F) while ASA disc rotates.
Return (D) to 5.6 by rotating (W)
(P) should begin to move when (D)=5.6
Continue rotation of (W)
(P) should have moved approximately 1/8" when (D)=1.9
(S) should then advance to "B", and (P) should advance to (R), simultaneously.

SERVICE HINTS

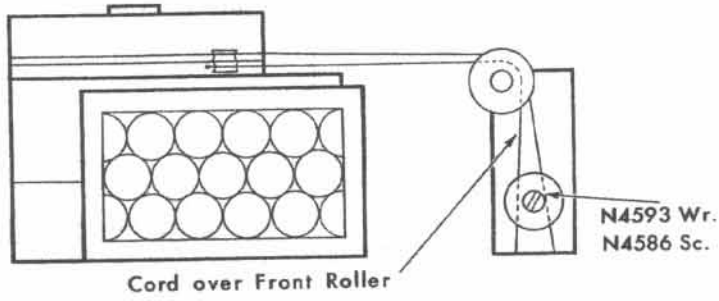
33. Meter Removal

a) Remove lens assembly, set (S) at "B", and (D) at f/1.9.
b) Remove top housing, ASA lock button and spring.

NOTE: Use caution, since meter may be dislodged prematurely and the transmission cord disengaged from lower roller assembly.

c) Clamp transmission cord to upper roller bracket assembly as shown:

CAUTION: Avoid over-tightening the screw.



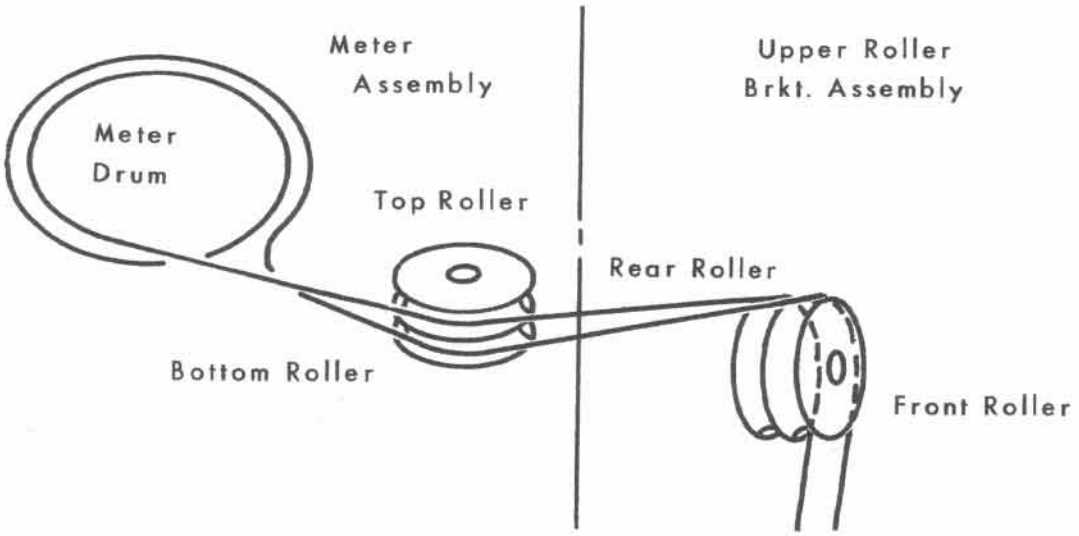

d) Lift left end of meter slightly to disengage bosses, then remove the assembly. Using care, unwind cord from drum and disengage it from clamping lug.

34. Meter Installation

a) Check "Zero Alignment" (Instruction 29). If adjustment is required, rotate eccentric stud at right side of meter.
b) Check "Meter Response" (Instruction 30). If out of tolerance, install replacement meter.

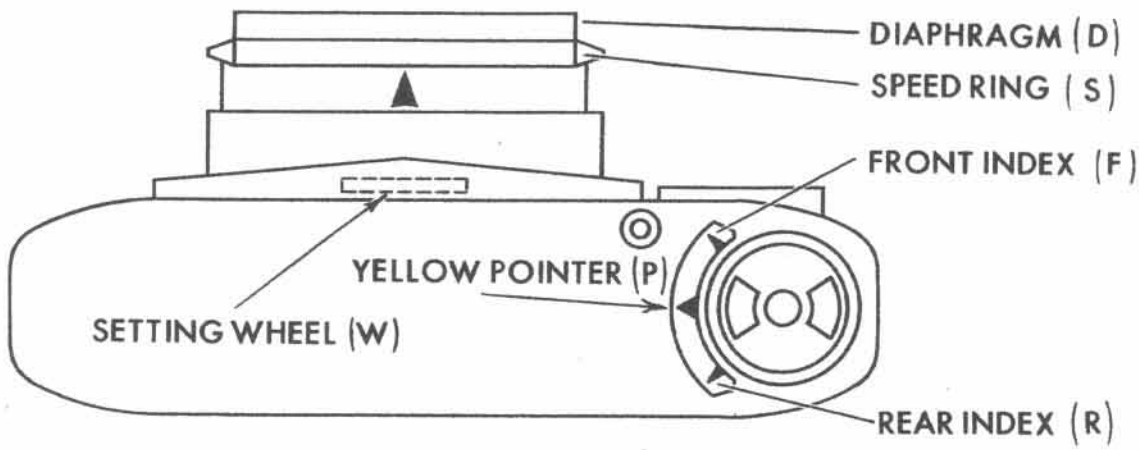
c) Carefully rewind cord around meter drum as shown, either before or after replacing meter on the case.

NOTE: It is important that the cord be replaced exactly as shown below, or rotation of the drum will be reversed.




d) Remove clamping screw and washer.

35. Final Adjustments




a) Initial alignment of yellow pointer (P)

Settings

ASA #10, (S) at "B", (D) at f/1.9

Hold (W) and rotate meterdrum until (P) is at (R)

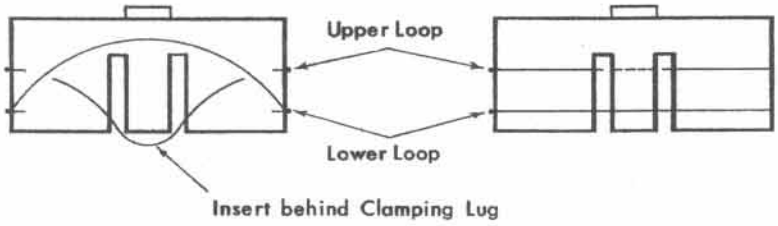
b) Check Standard Exposure Indication (Instruction 31). If incorrect, re-check Meter Response (Instruction 30) and alignment of pointer (P) (Instruction 35, a).

c) Check Exposure Setting Mechanism (Instruction 32).

If (P) does not travel as required, check installation of cord (Instruction 34, c).

d) If all checks prove satisfactory, rotate setting wheel until clamping lug on meter drum is above the clearance area at rear of meter.

e) Insert upper loop around drum and into clamping lug as shown:



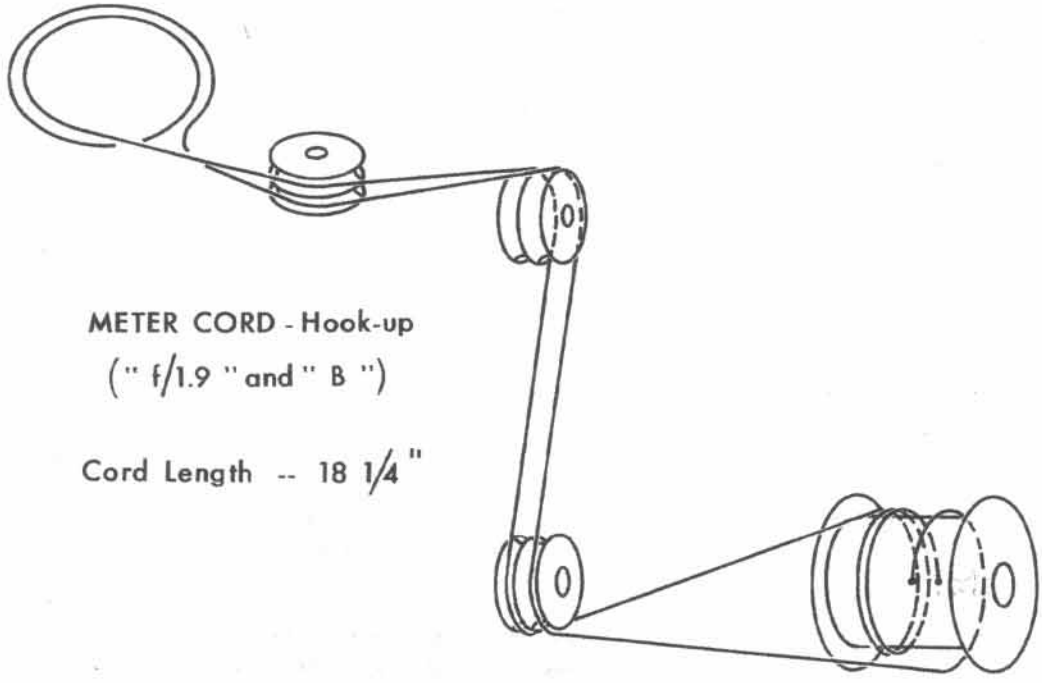

f) Re-check as in b) and c).

36. Transmission Cord Replacement

a) Replacement of transmission cord will require removal of the front mount and shutter assembly (Instruction 46), and the top housing.

b) Sketch shows the complete transmission cord hook-up for replacement purposes. The cord wind-up on the actuating drum must be made exactly as shown, and setting of the shutter should be "B" and "f/1.9" before replacing front assembly (Instruction 47).

c) After replacement of cord, meter must be adjusted in accordance with Instruction 35.



## S H U T T E R

Repairs to the shutter mechanism, other than the speed or diaphragm ring, will require removal of the complete front mount assembly. Basic shutter design is similar to the previous Retina Cameras except that the shutter has no diaphragm wings and uses six shutter blades.

### SPECIFICATIONS

37. Shutter speeds should be within the following total time tolerances:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | second | 800 to 1200 | milliseconds | 1/30 | second | 28 to 42 | milliseconds |
| 1/2 | " | 400 to 600 | " | 1/60 | " | 16 to 24 | " |
| 1/4 | " | 200 to 300 | " | 1/125 | " | 8 to 14 | " |
| 1/8 | " | 100 to 150 | " | 1/250 | " | 4.5 to 8 | " |
| 1/15 | " | 55 to 82 | " | 1/500 | " | 2.5 to 5 | " |

38. Flash contact should occur as follows:
   X - contact at full open shutter.
   M - 15 to 17 milliseconds from contact to full open shutter.

39. VXM lock lever should release selector lever and have spring tension sufficient to lock the lever when released.

40. VXM selector lever should:
   a) Operate without binds.
   b) Not move into the "V" position when shutter is not set.
   c) When set to "V", return to "X" position when shutter is tripped.

41. Self-timer should operate for approximately 8 to 10 seconds.

42. Rotation of speed selector ring (S) should (with lens removed):
   a) Rotate diaphragm ring in the opposite direction through the following ranges only:

| FROM | TO |
|---|---|
| 1/500, f/1.9 | 1/4, (midway between f/16 and f/22) |
| "B", f/22 | 1/60, f/1.9 |
| "B", f/1.9 | 250, f/22 |

   b) Be free of excessive binds.
   c) Have detent action at settings "B" through 500. (No detent action in green figure range except at "B").

43. Rotation of either the speed selector ring or the meter setting wheel should actuate depth of field pointers on any lens through full range of pointers.

44. Disassembly - Diaphragm and Speed Scale
   a) Remove lens.
   b) Set speed scale to "B" and diaphragm at f/1.9.
   c) Remove the three screws in retainer ring.

      NOTE: Do not rotate meter setting wheel from this step on or alignment of meter and ring will be destroyed.

   d) Remove retainer and diaphragm scale.

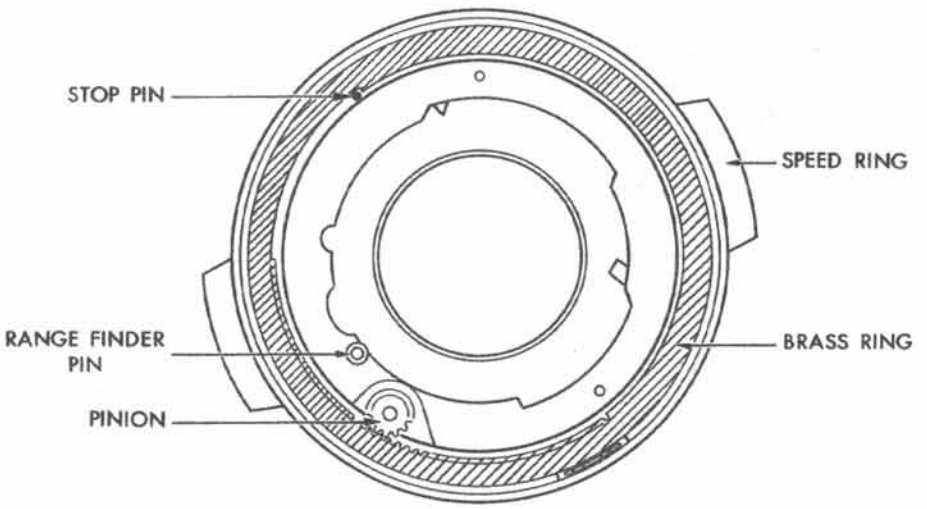
      NOTE: These two parts are coupled by a return spring and the lens diaphragm actuating lug, and disassembly can be accomplished by sliding the scale away from the retainer ring on the side opposite the diaphragm actuator lug.

e) Remove brass ring.
f) Remove speed ring, noting engagement of speed selector lug with ring.
g) If necessary, the small (upper) pinion and the drive pinion and shaft can be removed for lubrication or replacement. Use caution, since any rotation of setting wheel will affect alignment of meter and ring.

45. Reassembly - Diaphragm and Speed Scale

The following parts and assemblies should be lubricated sparingly and assembled as indicated:

a) Drive pinion shaft and stud for small pinion. Engage drive pinion shaft in meter actuating drum.
b) All bearing surfaces of speed ring assembly. Be sure speed selector lug is engaged and that "B" is opposite the index mark. Ring should rotate smoothly, with detent action only from "B" through "500".
c) All bearing surfaces of inner brass ring. Stop pin must be at right end of cut-out section as shown:




d) All bearing surfaces of retainer and diaphragm rings. Assemble at setting of "B" and f/1.9 and secure with three screws.
e) Final check - Set at "B" and f/1.9. Use (W) to rotate diaphragm to f/22. Continued rotation of (W) should advance (S) to 500 with only slight increase in "drag". Reverse rotation of (W) should first return diaphragm to f/1.9, then move (S) to "B" with only slight increase in "drag".

46. Disassembly - Front Mount and Shutter from Case

a) Remove advance lever, tripod socket outer ring and latch guard, bottom covering, bottom high light plate, and lens assembly.
b) Install special bottom plate (shortened to cover wind mechanism only) and film advance lever.
c) Set speed ring at "B", diaphragm at f/1.9, and ASA scale at 10.
d) Remove "KODAK SPOT" and turn back right and left front covering.
e) Remove the four (4) front mount screws.
f) With front of camera towards you, carefully insert a thin knife-like tool between mounting plate and case, just to the left of the meter setting wheel, to keep the meter actuating drum from moving forward on its stud.
g) Lift bottom of mounting plate sufficiently to clear the actuating drum, then slide it down slightly to disengage top of plate from case.
h) Remove the two spacing washers at each corner.
i) Do not rotate meter actuating drum unless required, as this will require re-orientation of actuating drum (Instruction 36) before reassembly of front.

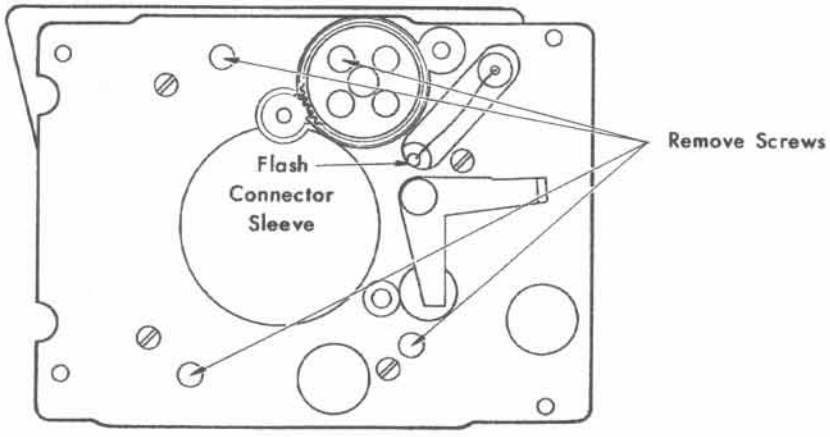
47. Reassembly - Front Mount and Shutter to Case
   a) Reposition meter actuating drum (Instruction 36).
   b) Replace spacers (two at each location with concave surfaces toward each other).
   c) Set speed ring at "B" and diaphragm at f/1.9.
   d) Rotate shutter setting idler gear until setting resistance is encountered.
   e) Hold front assembly at approximately $30^{\circ}$ angle and insert top edge under high light plate, then engage the transfer shaft and pinion with the idler gear and bearing. Finally, lower bottom edge of mount and engage diaphragm and speed scale pinion coupler shaft.

      NOTE: The use of four N4201 winding lever screws inserted temporarily in the case will hold the washers in position.

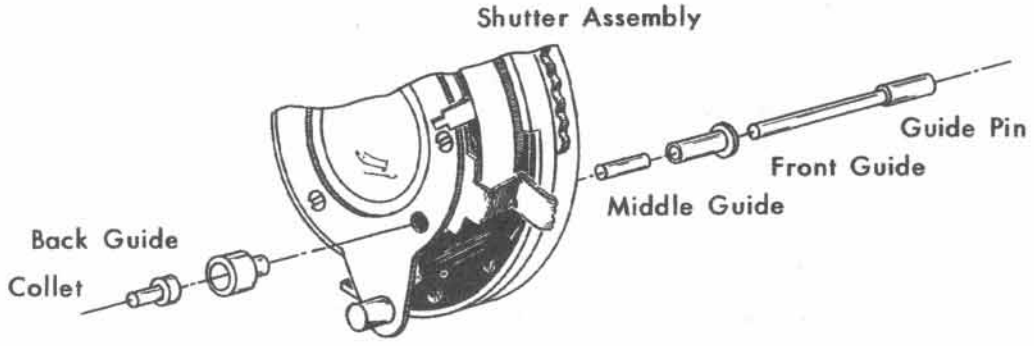
   f) Hold front securely in position and check operation of film advance lever in setting shutter.
   g) When operating satisfactorily, fit the original front screws and adjust them (by compressing the concave spacers) to make lens seat parallel to the film plane and 1.874" ± .001" from it.
   h) Replace the lens assembly and check range finder alignment.

48. Disassembly - Shutter
   a) Remove mounting plate and shutter from case. (Instruction 46).
   b) Remove the four screws as indicated and loosen the set screw in the plastic sleeve connecting flash post to shutter terminal.

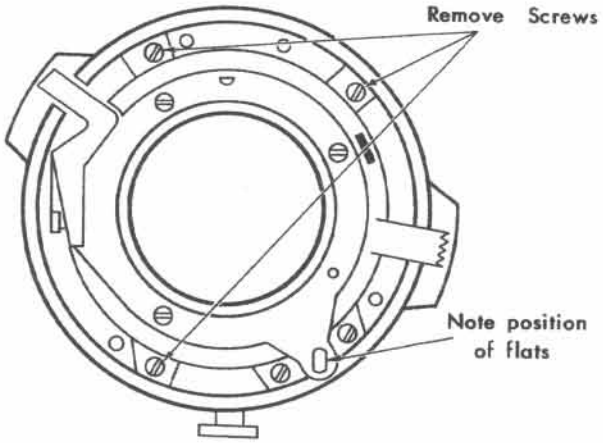
      NOTE: For reassembly purposes it may be helpful to mark the alignment between the large idler gear and the shutter setting coupler gear.




   c) Separate shutter assembly from mounting plate.
   d) Disassemble range finder actuating pin by first removing the split collet and back sleeve guide from the rear, and then withdrawing the pin and guides from the front.

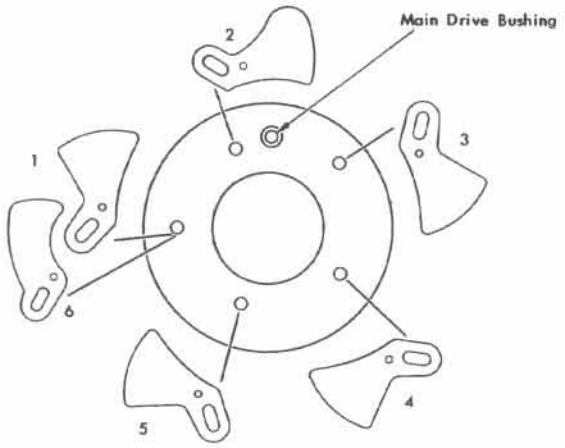


e) For reassembly purposes, set shutter at "B" and f/1.9 and carefully note the position of the flats on the shaft which connects to the meter actuating drum. Then remove the three screws indicated and separate shutter mechanism from the speed and diaphragm ring assembly.




f) Disassembly of balance of shutter is similar to the previous Synchro Compur Shutter, with the exception that the pinion bracket must be removed before mechanism plate can be removed from shutter case for blade repairs or replacement.

g) Shutter blades and their location on the plate.




Rear View of Mechanism Plate
(Blades 1, 3, 4 and 5 are identical)

49. Trouble Shooting

| | |
|---|---|
| Shutter Speeds | Disassemble as in Instruction 48. Speed adjustments are similar to those of the previous Synchro Compur Shutter used on the Retina IIIC & Reflex. |
| Flash Synchronization | Disassemble as in Instruction 48. Flash synchronization adjustments are similar to those of the previous Synchro Compur Shutter used on the Retina IIIC & Reflex. (Increase or decrease the tension of the synchro sector assembly spring). |
| Shutter does not set | Defective rack or transfer shaft. Incorrect engagement of transfer shaft with rack or with shutter setting idler gear. (Instruction 47). |